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Via Email

U.S. Department of Energy
Attn: Bulk-Power System EO RFI
1000 Independence Avenue, SW
Office of Electricity, Mailstop OE-20
Room 8G-024
Washington, DC 20585
bulkpowersystemEO@hq.doe.gov

**Re: DOE Request for Information – Securing the United States Bulk-Power System
DOE–HQ–2020–0028**

I. EXECUTIVE SUMMARY

Sungrow Power Supply Company, Ltd. (“Sungrow”), by and through its counsel, submits these comments in response to the Department of Energy (“DOE” or “Department”) Request for Information (“RFI”) on the subject of *Securing the United States Bulk-Power System*.¹ As Executive Order No. 13920 (“E.O. 13920”)² declares, threats to the bulk-power system by foreign adversaries constitute a clear and present danger, which should be addressed forthwith. Sungrow appreciates this opportunity to submit comments in furtherance of the Department’s efforts to identify the kinds of products that should be covered by E.O. 13920. Consistent with the bipartisan letter of U.S. Senators Joe Manchin (D-WV), Ranking Member of the Senate Energy and Natural Resources Committee, and Jim Risch (R-ID) to Secretary of Energy Dan

¹ *Securing the United States Bulk-Power System*, 85 Fed. Reg. 41023 (July 8, 2020).

² 85 Fed. Reg. 26595 (May 4, 2020).

Brouillette, Sungrow requests that these comments “be given full consideration and weight” during the DOE’s review.³

While there is clearly a national interest at stake, E.O. 13920 and DOE’s proceedings have raised tremendous uncertainty about which products will be prohibited and which products will be allowed thereby causing great disruption to the renewable energy market, specifically solar power. Urgent clarifications with respect to the breadth and scope of E.O. 13920 are needed as soon as possible to reverse the chilling effect on the investment climate for electric system equipment in the United States renewable energy sector. This uncertainty threatens to adversely impact the public interest by impeding supply of products that are integral to the development of generation resources, and the reliability and resilience of the electric grid. Care should be taken so that deleterious effects from this urgent call for implementing prohibitions on products does not wrongfully ensnare products that are legitimately used in power production—and which do not constitute a threat to the United States’ safety and well-being. Specifically, Sungrow urges the Department to clarify, as soon as possible:

- that photovoltaic inverters sold without a supervisory control and data acquisition (“SCADA”) system are not intended to be prohibited by E.O. 13920;
- that integrated energy storage system solutions are not intended to be prohibited by E.O. 13920; and
- that items not listed in Section 4(b) of E.O. 13920 are not intended to be prohibited by E.O. 13920.

Inverters and storage systems are caught in the web of uncertainty created by E.O. 13920. Sungrow submits that substantial cause exists for the Department to act expeditiously to dispel

³ See U.S. Senate Committee on Energy & Natural Resources, *Manchin And Risch Ask DOE To Include Energy Providers In Development Of Grid Security Protocol* (July 16, 2020), available at <https://www.energy.senate.gov/public/index.cfm/2020/7/manchin-and-risch-ask-doe-to-include-energy-providers-in-development-of-grid-security-protocol>.

this uncertainty. As evidenced by its flawless cybersecurity record since entering the U.S. market in 2015, Sungrow inverters and storage products do not present a threat to the U.S. bulk power system. Since inception, Sungrow has had an impeccable security record across all its global operations. Sungrow inverters and storage products offer safe, cost-effective means for developing new generation, especially solar and wind. Yet, Sungrow stands to lose potential customers because of the uncertainty as to whether the DOE's regulations will apply to Sungrow's inverters and storage products, and what (if any) risk applies for customers to have to rip out equipment and replace it.

Sungrow's inverters and storage products are not the types of products at issue in discussions about cyber risks to the bulk power system. Although the DOE has said that stakeholders do not need to take immediate steps at this time, various project developers have suspended or withdrawn from projects due to the uncertainties created by E.O. 13920.

For the reasons described below, Sungrow requests the Department expeditiously confirm that inverters and energy storage solutions that are imported and sold without SCADA systems are outside the scope of E.O. 13920. In particular, Sungrow's products should not be covered by E.O. 13920 because (1) the inverters or storage systems do not fall within the definition of bulk-power system electric equipment; and (2) the products do not pose an undue risk to the bulk power system, national security, the economy, or the safety and security of Americans. In the alternative, if the Department determines that these inverters and storage systems should be covered by E.O. 13920, Sungrow requests that the Department confirm at the earliest that Sungrow and its products are pre-qualified for future transactions. Also, to the extent the Department adduces evidence requiring such an approach, Sungrow would support a

tailored “rip and replace” order addressed to inverters equipped with non-U.S. made SCADA systems that have been integrated into the bulk power system.

II. DESCRIPTION OF SUNGROW

Sungrow is a global leading inverter solution supplier for renewables with over 100 GW installed worldwide as of December 2019. Founded in 1997 by University Professor Cao Renxian, Sungrow is a leader in the research and development of solar inverters, with the largest dedicated R&D team in the industry, and a broad product portfolio offering photovoltaic (“PV”) inverter solutions and energy storage systems for utility-scale, commercial, and residential applications, as well as internationally recognized floating PV plant solutions. With a strong 23-year track record in the PV space, Sungrow products are in power installations in over 60 countries, maintaining a worldwide market share of over 15%.

In the United States, Sungrow Americas is headquartered at 575 Market Street, San Francisco, CA 94105. Sungrow Americas also maintains a service training center at 4050 East Cotton Center Boulevard, Suite 75, Phoenix, AZ 85040 and has employees operating in 13 different states. Its corporate parent is headquartered in Hefei, China. The parent company is listed on the Shenzhen Stock Exchange. No foreign government directly or indirectly owns or controls the company.

Sungrow has two main product lines that are affected by the uncertainty resulting from E.O. 13920: (1) inverters and (2) energy storage systems.⁴ Sungrow’s inverter products include 3-phase string inverters (30kW-250kW), central inverters (2.5MW-3.6MW), and Turnkey inverter stations (12.47kV-34.5kV).⁵ All inverter products are designed and developed by Sungrow’s global headquarters in Hefei, China, and manufactured in Bangalore, India.

⁴ For more information about these products, see <https://sungrowpower.com/en/products>.

⁵ See <https://en.sungrowpower.com/ProductsHome/14>.

Sungrow's products also integrate transformer component parts designed and manufactured in the United States. Sungrow sells inverters to many countries globally, and certain specific inverter models are crafted for the United States market.⁶

Sungrow's large inverter systems reach end consumers via a direct sales channel while smaller systems reach end consumers via national distributors such as Consolidated Electrical Distributors (CED) and WESCO International. Large customers of Sungrow's inverter technology include leading U.S. construction companies, which offer engineering, procurement, construction, and O&M services for solar PV plants throughout North America such as McCarthy Builders (Phoenix), RES America (Broomfield), Signal Energy (Chattanooga), NextEra Energy Inc. (Juno Beach), Primoris Renewable Energy (Denver), Strata Solar LLC (Durham), Swinerton Builders (San Francisco), Blattner Energy, Inc. (Avon), and Rosendin Electric, Inc. (San Jose). The project development companies that use Sungrow include: Macquarie Capital (San Francisco), Consolidated Edison, Inc. (New York), Capital Power Corp. (Boston), Capital Dynamics, Inc. (New York), D. E. Shaw Renewable Investments, L.L.C. (New York), National Grid USA (Waltham), AES Corp. (Arlington), LightSource BP US (San Francisco), ENEL Green Power (Andover), Clenera, LLC (Boise), and RWE Renewables Americas (San Francisco).

In addition to inverters, Sungrow also manufactures lithium ion based Stationary Energy Storage equipment,⁷ which is used in peak shaving, frequency regulation, capacity firming, and may be combined with renewable generation. In 2016, Sungrow officially established a joint

⁶ Applicable models include the following: String-SG36CX, SG60CX, SG60KU-M, SG125HV, SG250HX, Central-SG2500U-MV, SG3150U-MV, and SG3600UD-MV.

⁷ See <https://sungrowpower.com/index.php/en/products/storage-system>. The specific products are Power Conversion System/Hybrid Inverter (String and Central), Li-Ion battery containers, and systems (Samsung-SDI, CATL, EVE).

venture with Samsung SDI Company (“Samsung”) – Sungrow-Samsung SDI Energy Storage Power Supply Co. (“SSEP”). In this joint venture, Sungrow is the distributor and integrator of Samsung’s battery products. Samsung leverages Sungrow’s global market penetration and customer base, and uses Sungrow as a sales channel. While Sungrow packages the storage solutions, it is not involved in the design or manufacture of these battery cells or related technology; SSEP provides fully integrated, high-end energy storage solutions. For example, in 2018, Sungrow announced a set of projects, totaling over 50MWh and spanning multiple sites across Massachusetts, California and Ontario, using customized systems including its 2MW-4.2MWh system solutions.⁸

Inverters and storage solutions are critical to providing reliable, resilient, and affordable electricity to customers. As the DOE has recognized, “[a]n inverter is one of the most important pieces of equipment” in alternative energy systems such as solar grids.⁹ Inverters play a significant role in energy systems by converting variable direct current to alternating current.¹⁰ Inverters provide a number of essential grid services to maintain system-wide balance and manage electricity transmission, including responding to deviations in voltage or frequency, grid-forming and black start, and providing reactive power.¹¹ Similarly, the DOE has emphasized the importance of energy storage to the grid.¹² Storage systems allow for the flexible use of energy at different times from when it was generated, which can increase system

⁸ *Sungrow Wins Deal to Supply Over 50MWh of ESS Solutions to North America*, PR NEWS (May 25, 2018) <https://www.prnewswire.com/news-releases/sungrow-wins-deal-to-supply-over-50mwh-of-ess-solutions-to-north-america-300654906.html>.

⁹ *See Solar Integration: Inverters and Grid Services Basics*, Dept. of Energy, available at <https://www.energy.gov/eere/solar/solar-integration-inverters-and-grid-services-basics> (last accessed July 13, 2020).

¹⁰ *Id.*

¹¹ *Id.*

¹² *See Solar Integration: Solar Energy and Storage Basics*, Dept. of Energy, available at <https://www.energy.gov/eere/solar/solar-integration-solar-energy-and-storage-basics> (last accessed July 13, 2020).

efficiency and resilience.¹³ Energy storage can improve power quality by matching supply and demand.¹⁴

Given the recognized importance of inverters and storage solutions to the grid, Sungrow submits that it is crucial and time-sensitive to limit the scope of E.O. 13920 to only those products that are considered particularly vulnerable so as to preserve the integrity of the grid. As described in these comments, Sungrow is committed to creating secure and reliable products for its customers.

Before turning to Sungrow's specific comments, it is important to note that the solar energy industry provides many benefits to the United States such as:

- Job Creation: As of Fall 2019, nearly 250,000 Americans work in solar.¹⁵
- Growth in Private Investment: In 2019, the solar industry generated \$18.7 billion of investment in the American economy.¹⁶ Private investment in public infrastructure is great for the United States economy.
- Lower Cost of Energy for Consumers: The cost to install solar has dropped by more than 70% over the last decade, leading the industry to expand into new markets and deploy thousands of systems nationwide. Prices as of Q1 2020 are at their lowest levels in history across all market segments. An average-sized residential system has dropped from a pre-incentive price of \$40,000 in 2010 to roughly \$18,000 today, while recent utility-scale prices range from \$16/MWh - \$35/MWh, competitive with all other forms of generation.¹⁷
- Energy Security: U.S. energy security is increased by reducing dependence on foreign gas and oil.
- Reliability: Solar inverters and energy storage solutions help stabilize the U.S. power grid.

All these benefits are currently being curtailed due to the uncertainty E.O. 13920 has created.

¹³ *Id.*

¹⁴ *Id.*

¹⁵ See Solar Energy Industries Association, Solar Industry Data, available at <https://www.seia.org/solar-industry-research-data>.

¹⁶ *Id.*

¹⁷ *Id.*

III. COMMENTS

Sungrow is among the most commonly installed inverter technologies in major infrastructure projects across the United States without a single cybersecurity issue since entering the market in 2015. In 2020, it is anticipated that investment in the United States will create approximately 18 GW of new solar power installations.¹⁸ Sungrow products will be used in approximately 25% of those projects. No competitor of Sungrow can service the U.S. market in terms of the quality, quantity and cost of Sungrow's products. E.O. 13920 potentially limits healthy competition in a product category that does not have any U.S. suppliers, which harms project developers and consumers. Although the DOE has stated "[s]takeholders do not need to take immediate steps at this time" regarding E.O. 13920,¹⁹ Sungrow has already been affected by the uncertainty created by the E.O. Many of Sungrow's customers are American companies or companies building electric generation projects in the United States. Some companies have delayed, redesigned or cancelled projects due to the lack of clarity surrounding the products covered by E.O. 13920 and the possibility of additional long run costs if covered products are procured.

Without a doubt, such cancelled contracts have had ripple effects throughout the market – major American projects have been delayed by more than a year, and American power producers have been forced to redesign projects from scratch adding substantial costs to projects. These potential long run costs, and long lead times in electricity component procurement have dampened negotiations, budgeting, and planning in the renewable energy market since investors

¹⁸ See Solar Energy Industries Association, Solar Market Insight Report 2020 Q2, *available at* <https://www.seia.org/research-resources/solar-market-insight-report-2020-q2>.

¹⁹ Executive Order on Securing the United States Bulk-Power System, Frequently Asked Questions, Dep't of Energy, at 2 (May 2020), *available at* <https://www.energy.gov/sites/prod/files/2020/05/f74/DOE%20BPS%20EO%20FAQ.pdf> ("DOE FAQs").

in the renewable energy market seek to avoid investing in transactions that, absent clarification from the DOE, may appear to be covered by E.O. 13920. The overhang of uncertainty has cost manufacturers and developers millions of dollars in business and potential clients, while stifling the investment climate in power system equipment in the United States.

Despite the DOE's best efforts, confusion surrounding E.O. 13920 has persisted throughout the industry. Sungrow notes there is no debate about the urgency of the threat intended to be addressed by E.O. 13920. Rather, the concern is announcement of proscriptive rulings without definitive instructions about exactly what products will be prohibited and what products will be permitted. This lack of definitive guidance has left EPC contractors, developers, lenders and investors with substantial doubts and questions, and has stymied efforts to move forward on generation development projects. The present circumstances highlight a well-trodden situation in which potential regulation clouds the ability for businesses to make decisions. This creates an adverse impact on the public interest with regard to ensuring that project developers have access to legitimate, cost-effective inverters and storage products.

The Department's representatives in their public remarks about implementing E.O. 13920 have clearly recognized the problem in that they have tried to assure the market that no product is presently covered, and that the Department will proceed methodically.²⁰ The Department's publication of FAQ answers likewise aims to assure the market.²¹ Those acknowledgements, as helpful as they are, must be effectuated as quickly as possible by having DOE issue clarification

²⁰ See Department of Energy, Transcript of Stakeholder Call on the Bulk-Power System Executive Order (May 21, 2020), available at https://www.energy.gov/sites/prod/files/2020/06/f75/DOE_BPS-EO_StakeholderCall_052120.pdf; Auburn University, The McCrary Institute for Cyber and Critical Infrastructure Security, Securing the Grid (June 2, 2020), available at <http://mccrary.auburn.edu/events/securing-the-grid.html>.

²¹ See *supra* n.19.

that inverters and storage solutions lie well outside the scope of E.O. 13920. Consistent with these concerns, Sungrow provides the following responses to particular questions in the RFI.

- a. Question B-3: Does the energy sector have a procedure to identify services, components, and/or systems which are or should be covered by E.O. 13920? If yes, list the services, components, and systems and provide the reasoning regarding why they should or should not be covered by E.O. 13920.*

Sungrow supports the goals of E.O. 13920 and the Department's efforts to ensure the national security of critical infrastructure within the United States' bulk-power system. E.O. 13920 is focused on preventing the creation of vulnerabilities and mitigating foreign threats to the bulk power system. As E.O. 13920 recognized, maintaining an open investment climate in bulk-power system electric equipment, and in the United States economy more generally, is important for the overall growth and prosperity of the United States, which must be balanced with the need to protect the United States against a critical national security threat. In order to achieve this balance, the Department should adopt a tailored approach aimed at threats to the United States bulk-power system, while also minimizing the financial impact on consumers and participants in the supply chain as a whole. To this end, the Department should clarify that all inverters or storage products which are imported and sold without SCADA systems are not covered by E.O. 13920.

i. The Department Should Clarify That Inverters And Storage Systems Which Are Imported And Sold Without SCADA Systems Are Not Covered By E.O. 13920

Sungrow appreciates the Department's clarifications that stakeholders do not need to take immediate steps at this time.²² Nonetheless, in Sungrow's experience, uncertainties

²² DOE FAQs at 2 ("Stakeholders do not need to take immediate steps at this time. The Executive Order is focused on ensuring the national security of critical infrastructure within the United States' bulk-power system, which is just a portion of the country's entire energy infrastructure. Further, before DOE could prohibit actions involving the equipment identified in the Executive Order, there would need to be a nexus between a foreign adversary and an

surrounding the application of the E.O. 13920 have had a chilling effect on the investment climate in bulk-power system electric equipment. E.O. 13920 and the RFI appear to be focused on transformers, reactive power equipment, circuit breakers, and the other identified bulk-power system components to which E.O. 13920 specifically applies. Although the definition of “bulk-power system electric equipment” states that items not included in the delineated list and that have broader application of use beyond the bulk-power system are outside the scope of E.O. 13920, some uncertainty remains for customers of products like Sungrow’s inverters and storage systems. This commercial upheaval is exacerbated by the fact that the lead time in electricity component supply chains and procurement procedures is often months long, involving detailed negotiations, “budgeting, engineering, and planning before equipment can be safely and reliably supplied.”²³

Further, clarifying that inverters and storage systems are outside the scope of E.O. 13920 is consistent with the Department’s statements about the adoption of renewable energy in the United States. The Department clarified that “[r]enewables play a very important role in the country’s energy infrastructure and the Administration supports an ‘all of the above’ approach to generation” and E.O. 13920 “applies only to the bulk-power system, which would include electric energy from generation facilities needed to maintain transmission reliability.”²⁴

Interpreting the definition of bulk-power system electric equipment to include inverters and/or storage systems, particularly those imported and sold without SCADA systems, would

undue risk to the BPS, critical infrastructure, the economy, the security and safety of Americans, or national security. Thus, for many stakeholders, there will be no impact. And even for affected stakeholders, DOE will consider procedures for mitigation measures that may allow for the use of equipment that would otherwise be prohibited. . . . As of today, no equipment is prohibited. The Executive Order is focused on ensuring the national security of critical infrastructure within the United States’ bulk-power system, which is just a portion of the country’s entire energy infrastructure. As such, any immediate steps by owners or operators would not only be premature, but may be unnecessary.”).

²³ *Executive Order 13920: Securing the United States Bulk-Power System – EEI Whitepaper*, EEI (July 2020).

²⁴ DOE FAQs at 5.

create a barrier to renewable generation in the United States. To the extent that the rules and regulations under E.O. 13920 impose higher costs and/or delays—including through uncertainty surrounding the coverage of inverters and storage systems—that will diminish the ability of companies to deploy solar or other renewable generation in the United States. This is because timing for project finance and development is very tight vis-à-vis eligibility for the federal investment tax credit for solar facilities. Further, returns in favor of equity cannot afford to surrender any basis points under the current circumstances. Otherwise, it is just not lucrative to undertake the development.

Furthermore, in order to take advantage of the safe harbor provisions of the solar investment tax credit (“ITC”), some Sungrow customers have already procured inverters and other necessary component parts for their solar projects.²⁵ The present uncertainty surrounding E.O. 13920 will undoubtedly have a chilling effect on any further procurement of components. It also leaves in limbo the fate of those component parts that have already been procured for ITC purposes but remain warehoused. It is also unclear whether procured products that eventually fall under the scope of E.O. 13920 will fall outside the ITC safe harbor.²⁶ Sungrow requests that DOE’s immediate and clear guidance is necessary to avoid imposing disproportionately large costs and burdens on project developers.

Given the recognized importance of inverters and storage systems to the United States electric power grid, along with the long lead times for procurement and manufacturing, the electric power sector cannot wait years for increased domestic production of these products.

²⁵ One way to safe harbor is to spend 5% or more of the total cost of the facility. Notice 2013-29, Internal Revenue Service (2019) available online at <https://www.irs.gov/pub/irs-drop/n-13-29.pdf>. This may include product procurement.

²⁶ Presently, the Internal Revenue Service only contemplates tolling the safe harbor where the Department of Defense has raised security concerns regarding a plan and efforts are undertaken to mitigate such concerns by modifying the plan. Notice 2019-43, Internal Revenue Service (2019) available online at <https://www.irs.gov/pub/irs-drop/n-19-43.pdf>.

In a complex global supply chain, actions that unduly restrict or otherwise create additional uncertainty around the market for equipment such as inverters and storage systems can also have impacts to grid reliability. Indeed, restricting the import of such products would effectively would relegate an entire industry to reliance on an unreasonably small number of domestic inverter and storage system suppliers. Supplier diversity mitigates supply chain risks that could threaten the reliability of the electric grid. Moreover, different types of inverters and storage systems are needed for different applications. Filling the supply vacuum in a safe, reliable and timely manner would be a herculean task—one that would undoubtedly cause more expensive delays and added frustration for the electric power sector already facing the economic consequences of COVID-19. Accordingly, Sungrow respectfully requests that the Department provide certainty that inverters and storage systems imported and sold without SCADA systems fall outside the scope of E.O. 13920.

ii. Inverters And Storage Systems Do Not Fall Within The Definition Of Bulk-Power System Electric Equipment

Inverters and storage systems are not specified on the list of over twenty items within the definition of bulk-power system electric equipment in E.O. 13920. While Sungrow’s inverters do support systems greater than 69 kV, they also have broader uses beyond the bulk-power system. As E.O. 13920 and the DOE FAQs make clear “items not included in the list and that have broader application of use beyond the bulk-power system are outside the scope of the order.”²⁷ For example, Sungrow’s residential inverters can be used off the electric grid, and its utility scale inverters can also be used outside the scope of the bulk-power system. Such applications may include, but are not limited to, low to medium voltage local distribution grids, behind-the-meter-applications (e.g. powering a school, factory or other large commercial off-

²⁷ DOE FAQs at 3.

taker), or combination solar and storage applications. For example, Sungrow supplied inverters for 5.5 MW of solar carports on parking lots across the Chaffey Community College District campus in California, which solar projects are expected to save that district \$28.5 million over the life of the project.²⁸ Similarly, Sungrow supplied inverters for a 1.6 MW project the Gilroy School District in Gilroy, CA expected to save the school district \$1.5 million in energy costs over 25 years.²⁹

Based on the definitional scope alone, Sungrow's inverter products and storage solutions do not fall within the scope of E.O. 13920.

iii. These Products Do Not Pose An Undue Risk Of Sabotage, Subversion, Catastrophic Effects, Or Risk To National Security

Sungrow's products also do not pose undue risk to the bulk power system, critical infrastructure, the economy, the security and safety of Americans, or national security. Inverters require supervisory devices such as SCADA or other controllers to control inverters and direct its tasks. Sungrow **does not** supply these supervisory devices.

The concern of foreign malicious action is focused on "smart inverters" that are connected to the internet and capable of two-way communications.³⁰ The main threat is that such smart inverters may be breached remotely to cause reliability issues on the grid, or that Trojan files could be hidden in the inverters during the manufacturing process that could be disruptive to the bulk power system when activated.³¹

²⁸ See Borrego Solar, Chaffey Community College District School District, <https://www.borregosolar.com/solar-project-portfolio/largest-community-college-solar-project>.

²⁹ See Borrego Solar, Gilroy Unified School District, <https://www.borregosolar.com/solar-project-portfolio/gilroy-unified-school-district>.

³⁰ Andrew Coffman Smith, *Former U.S. Homeland Chief warns Chinese Solar Inverters Pose Cyber Threat*, S&P Global (Nov. 6, 2018).

³¹ *Id.*

By contrast, simple inverters imported and sold without a SCADA system are not capable of this type of malicious action because they only have the most rudimentary internal micro-control systems. To hack such an inverter, one would have to coordinate a physical attack requiring direct access to the software and hardware of the inverter's micro-controls. Removing the remote access capabilities, internet connection, or any other two-way communication (*e.g.*, through SCADA systems) effectively neutralizes the aforementioned concerns. Such inverters imported without a SCADA system do not pose a threat to the bulk power system, particularly when paired with American made security and supervisory systems.

To this end, Sungrow supports prohibiting the import of SCADA systems from all foreign countries to ensure that inverters imported into the United States pose no threat to cybersecurity. To further protect the bulk-power system, Sungrow would also support a tailored and specific "rip and replace" order for all inverters equipped with non-U.S. made SCADA systems that have been integrated into the bulk power system. Such targeted rules would be more consistent with E.O. 13920's goal of protecting the security and reliability of the U.S. electric grid than a broader prohibition that includes inverters with American-made SCADA systems.

As noted above, Sungrow does not supply inverters with SCADA systems to companies in the United States. Rather, Sungrow encourages the use of American-made SCADA systems with exe-Guard developed by the DOE. This effectively ensures that systems built with Sungrow are virtually impenetrable to hacks and almost exclusively protected by American made cybersecurity technology. As evidenced by its perfect cybersecurity record since entering the market in 2015, Sungrow believes this model is a much safer option compared to other foreign inverter manufacturers who export their non-American technology to the United States. To the

extent manipulation may be possible through such external SCADA systems, all Sungrow inverters will turn off within a certain number of cycles if they detect malicious action. Outside the SCADA systems, the inverters are not controllable or addressable remotely, such as through the internet or a closed circuit.

Sungrow products also undergo a slew of reliability and security tests before they are finally used in electrical systems: in-house testing, independent laboratory testing, compliance with North American Electric Reliability Corporation (“NERC”) requirements, and cybersecurity assessments. First, Sungrow has an in-house testing laboratory that is fully compliant with standards established by Underwriters Laboratory (“UL”). All of Sungrow’s products undergo rigorous in-house testing. Second, all of Sungrow’s products are independently tested by third-party laboratories for compliance with American safety standards before they are installed. In the United States, the American National Standards Institute (“ANSI”), UL, and the Institute of Electrical and Electronics Engineers (“IEEE”) are responsible for inverter safety standards. Sungrow ensures, through independent testing at nationally recognized laboratories, that all products imported into the United States are compliant with these standards. Third, all Bulk Power Systems are already governed by NERC’s Critical Infrastructure Protection (“CIP”) security standards. To the extent that DOE’s regulations will build upon the NERC-CIP standards, Sungrow highlights that it remains fully compliant with all existing NERC-CIP requirements.³²

Finally, as a matter of good practice and in response to E.O. 13920, Sungrow has contracted with NTT Ltd. (“NTT”) to perform a comprehensive cyber security assessment. NTT is a market leader in the cybersecurity and managed security services space, with over 4000

³² 85 Fed. Reg. at 41024 (citing <https://www.nerc.com/pa/Stand/Pages/CIPStandards.aspx>).

enterprise clients worldwide, supported by a geographically dispersed network of Security Operations Centers harvesting and analyzing more than 9.5TB of data per day. NTT operates a world-class portfolio of cybersecurity services focusing on security operations, threat detection, Incident Response, OT & IOT Security, Cyber Security Advisory, and Governance Risk and Compliance.³³

NTT's assessment of Sungrow's security protocols will include the following elements:

1. An internal threat assessment to verify that the Sungrow inverter communications module does not pose any threat to the bulk power system;
2. A penetration test to verify that the Sungrow inverter communications module is resilient against any external intrusion; and
3. A SCADA firewall assessment to review typical industry architectures and assess the extra level of protection they provide.

The output of this assessment will be a report and letter of attestation on NTT's findings. Sungrow plans to make this evaluation a regular practice either with NTT or any other third party security assessment partner that the DOE deems credible.

The independent testing, the limited vulnerabilities, and the mitigation measures already in place ensure that Sungrow's products do not pose an undue risk to the bulk power system, critical infrastructure, the economy, the security and safety of Americans, or national security.

iv. If The Department Determines That Inverters And Storage Systems Are Within The Scope Of E.O. 13920, Sungrow And Its Products Should Be Pre-Qualified As Soon As Possible

If the Department finds that inverters and storage solutions are within the scope of E.O. 13920, Sungrow strongly urges the Department to pre-approve or pre-qualify Sungrow's

³³ NTT Overview, available online at <https://hello.global.ntt/en-us/products-and-services/security>.

products for all future transactions. As discussed above, Sungrow's products do not pose an undue risk to the bulk power system, critical infrastructure, the economy, the security and safety of Americans, or national security. E.O. 13920 authorizes the Secretary to establish and publish criteria for recognizing particular equipment and vendors in the bulk-power system electric equipment market as "pre-qualified" for future transactions and to apply these criteria to establish and publish a list of pre-qualified equipment and vendors.³⁴ Given the sourcing challenges and cost impacts for companies facing prohibited transactions for bulk-power system electric equipment, Sungrow requests that the Department undertake this pre-qualification process as soon as possible.

First, as described above, all Sungrow products are independently tested at American laboratories pursuant to American safety and reliability standards. Sungrow ensures that its products pass all such tests before they enter the domestic supply chain. Second, none of the products supplied by Sungrow to the United States have integrated SCADA technology. Instead, Sungrow encourages its customers to choose Made-in-USA, SCADA systems with malware protection, notably exe-Guard developed by the Department. This effectively ensures that systems built with Sungrow products are virtually impenetrable to hacks and almost exclusively protected by American made cybersecurity technology. Sungrow has stress-tested its products through rigorous independent laboratory procedures and effectively mitigates the residual risks addressed in E.O. 13920. The aforementioned actions provide ample justification for pre-approving or pre-qualifying Sungrow and its products for future transactions.

To the extent that the Department is currently developing procedures for mitigation measures that would allow for transactions to occur that would otherwise be prohibited under

³⁴ 85 Fed. Reg. at 41023.

E.O. 13920, Sungrow emphasizes the need for clear and expeditious action. The Department has indicated that examples of mitigation measures may include testing components and addressing vulnerabilities or inspecting manufacturing plants, which measures may be used as a pre-condition to allow a transaction (or class of transactions) that otherwise would have been prohibited.³⁵ Sungrow supports the prompt implementation of such procedures in order to provide certainty for electric power sector investment decisions.

- b. *Question A-2: Do energy sector asset owners and/or vendors identify, evaluate, and/or mitigate the following: a. FOCI with respect to foreign adversaries with respect to access to company and utility data, product development, and source code (including research partnerships); b. potential supply chain risks from sub-tier suppliers, recognizing that some sub-tier supply chain manufacturers could have FOCI with respect to foreign adversaries; and c. assets and services critical risk tolerance regarding protecting these assets and services from FOCI?***

The DOE has stated that before it could prohibit actions involving the equipment identified in the E.O. 13920, there would need to be a nexus between a foreign adversary and an undue risk to the bulk power system, critical infrastructure, the economy, the security and safety of Americans, or national security.³⁶ The RFI provides a current list of “foreign adversaries” for purposes of E.O. 13920.³⁷ Sungrow respectfully requests that the DOE provide further clarity regarding the required nexus with a foreign adversary, particularly as it relates to foreign ownership, control, and influence (FOCI).

The DOE should not exclude entire companies or products based solely on their connection to the listed foreign adversary countries, such as a company’s nationality. Rather than restricting all imported products from non-state owned companies with no demonstrated

³⁵ DOE FAQs at 4.

³⁶ *Id.*

³⁷ 85 Fed. Reg. at 41024 (“The current list of ‘foreign adversaries’ consists of the governments of the following countries: The People’s Republic of China (China), the Republic of Cuba (Cuba), the Islamic Republic of Iran (Iran), the Democratic People’s Republic of Korea (North Korea), the Russian Federation (Russia), and the Bolivarian Republic of Venezuela (Venezuela).”).

conduct significantly adverse to the national security of the United States, the Department should focus on those products actually designed, developed, manufactured, or supplied by foreign governments and foreign non-government persons engaged in a long-term pattern or serious instances of conduct significantly adverse to the national security of the United States, its allies, or the security and safety of United States persons. Both American companies (*e.g.*, Swinerton Builders) and companies headquartered in allied or non-adversarial countries (*e.g.*, Schneider Electric Co., a European multinational company), rely on Sungrow technology through specific distribution agreements, based on Sungrow's impeccable security record across its global operations.

Outside the "foreign adversaries" listed in the RFI, companies have little guidance about what transactions are covered as having a sufficient nexus with a foreign adversary. This uncertainty leaves global companies, such as Sungrow, in constant limbo and makes it difficult for Sungrow's customers in the United States to assess the risks of certain transactions. Clear processes and identification of the required amount of FOCI is essential for business planning related to electric system component procurement.

Sungrow respectfully requests the Department to consider identifying companies or products with a connection to the listed "foreign adversary" countries that present little risk, and to create safe harbors or similar protections for such companies and products. As contemplated by E.O. 13920, the Department could publish a list of pre-qualified equipment and vendors, including equipment or vendors with a connection to one of the listed "foreign adversary" countries.

IV. CONCLUSION

Sungrow respectfully requests that the Department consider these comments and ensure that any DOE action recommended regarding E.O. 13920 is consistent with them. Sungrow fully

supports the necessity of safeguarding the bulk power system and the goals of E.O. 13920. For the reasons discussed above, Sungrow's inverters and storage systems should not be covered by E.O. 13920 because these products (1) do not fall within the definition of bulk-power system electric equipment; and (2) do not pose an undue risk to the bulk power system, national security, the economy, or the safety and security of Americans.

Respectfully Submitted,

/s/

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